

AMENDMENT OF THE CLAIMS

1. (currently amended) A method of automatically laying out pieces to be cut out from remnants of flexible material having non-uniform characteristics, and to be used for making articles, said method comprising ~~being characterized in that it comprises the steps consisting in:~~

132 establishing, for remnants of a determined type, at least one mask whose area is subdivided into various zones which correspond to different value levels of a characteristic of the material of the remnant;

assigning a set of constraints to at least some of the component pieces of a determined type of article, which set of constraints includes at least one value constraint for a characteristic of the material of the remnant;

defining links between at least some of the component pieces, which links have different levels as a function in particular of relationships imposed between constraints assigned to the pieces;

digitizing each remnant in order to obtain an image;

applying to the image of each remnant the mask or each mask corresponding to the type of the remnant by performing dimension matching so as to subdivide the image of the remnant into various zones having uniform characteristics; and

laying out automatically by disposing the pieces in the zones of the image of the remnant as a function of any constraints assigned to the pieces, and in compliance with the links defined between the pieces.

2. (original) A method according to claim 1, characterized in that, for a remnant of a determined type, at least one mask is established chosen from:

a mask comprising zones having different values for the color shade of the material; and

a mask comprising zones having different values for a surface appearance characteristic of the material.

3. (original) A method according to claim 2 for automatically laying out pieces to be cut out from hides so as to be used to make articles of leather, said method being characterized in that a mask is established that comprises zones having different values for the grain of the leather.

4. (previously presented) A method according to claim 1, characterized in that a mask is applied to the image of remnant by causing reference axes respectively associated with the mask and with the remnant to coincide.

5. (original) A method according to claim 4 for automatically laying out pieces to be cut out from hides so as to be used to make articles of leather, said method being characterized in that an axis corresponding to the backbone of the animal from which the hide is taken is used as the reference axis.

6. (previously presented) A method according to claim 4, characterized in that the reference axis is determined by indicating or marking it manually on the remnant.

7. (previously presented) A method according to claim 4, characterized in that the reference axis is determined by analyzing the image of the digitized remnant.

8. (previously presented) A method according to claim 1, characterized in that at least some of the component pieces of a determined type of article are distributed into groups, and any links between the groups and between groups and pieces are defined.

9. (original) A method according to claim 8, characterized in that at least some pieces are distributed into functional groups, each of which comprised the component pieces(s) of a sub-assembly of the article.

10. (previously presented) A method according to claim 1, characterized in that at least some pieces are assigned one or more constraints chosen from:

- a value level for the color shade or the material;
- a value for a surface state characteristic of the material; and
- a preferential angular position relative to a reference axis of the remnant.

11. (original) A method according to claim 10, characterized in that at least some pieces are assigned a preferential angular position constraint relative to a reference axis of the

remnant, and are associated with angular position tolerance data corresponding to a maximum allowed angle of rotation relative to the preferential angular position.

B2 12. (previously presented) A method according to claim 1, characterized in that in that links are defined between at least some pieces, which links have different levels as a function of proximity constraints assigned to the pieces.

13. (original) A method according to claim 12, characterized in that the proximity constraints between two pieces are expressed in the form of a maximum distance between two characteristic points on the pieces, or in the form of a maximum difference between values levels of one or more characteristics of the material of the remnant.

14. (previously presented) A method according to claim 1, characterized in that, for a remnant of a determined type, a possible coefficient of stretching of the material in at least one determined direction relative to a reference axis of the remnant is defined, and the layout is defined by optionally using the defined stretching capacity.

15. (previously presented) A method according to claim 1, characterized in that at least some pieces or groups of pieces are assigned respective layout priority levels, and the laying out is performed in order of decreasing priority.

16. (original) A method according to claim 15, characterized in that, the higher the level of link between a piece or a group of pieces and another piece or group, the higher the priority level assigned to the piece or group of pieces.

B2 17. (previously presented) A method according to claim 1, characterized in that any flaws on each remnant are detected, and each detected flaw is associated with data representing one of a plurality of predetermined degrees of seriousness, and flaw information is stored comprising data indicating the locations of the flaws on the remnant and the associated data indicating the levels of seriousness.

18. (original) A method according to claim 17, characterized in that each of the component pieces of a determined type of article is associated with information representing the degree of flaw seriousness tolerated by said piece.

19. (new) A method of automatically laying out pieces to be used for making articles and to be cut out from at least one remnant belonging to a type of remnant of flexible material having non-uniform characteristics, said method comprises:

establishing, for the type of remnant to be used, at least one mask applicable to the type of remnant and whose area is subdivided into various zones which correspond to different value levels of a characteristic of the material of the remnants of said type;

assigning a set of constraints to at least some of the component pieces of a determined type of article, which set of constraints includes at least one value constraint for a characteristic of the material of the remnant;

defining links between at least some of the component pieces, which links have different levels as a function in particular of relationships imposed between constraints assigned to the pieces;

digitizing at least one remnant of said type in order to obtain an image;

132 applying the mask to the image by performing dimension matching so as to subdivide the image of the remnant into various zones having uniform characteristics; and

laying out automatically by disposing the pieces constitutive of the article to be made in the zones of the image of said at least one remnant as a function of any constraints assigned to the pieces, and in compliance with the links defined between the pieces.

20. (new) A method according to claim 19, characterized in that, for a determined type of remnant, at least one mask is chosen from:

a mask comprising zones having different values for the color shade of the material; and

a mask comprising zones having different values for a surface appearance characteristic of the material.

21. (new) A method of automatically laying out one or more pieces to be cut out from remnants of flexible material having non-uniform characteristics, and to be used for making articles, said method comprising:

establishing at least one mask having an area subdivided into various zones corresponding to a characteristic of a remnant type;

assigning a set of constraints to said one or more pieces, which set of constraints includes at least one value constraint for a characteristic of the remnant;

digitizing a first remnant of said remnant type in order to obtain an image;

applying the mask to the image by performing dimension matching so as to subdivide the image into various zones having uniform characteristics; and

laying out said one or more pieces in said zones as a function of said set of constraints.